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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/069,047

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Katsuya Sakayori

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10/09/2007

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EXAMINER

HAIDER, SAIRA BANO

ART UNIT

PAPER NUMBER

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/069,047

Applicant(s)

SAKAYORI ET AL.

Examiner

Saira Haider

Art Unit

1711

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2007 and 03 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 42,44-48,50-55 and 57-63 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 42,44-48,50-55 and 57-63 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

1. The rejections have been maintained and the response to arguments is provided below.

Specification Objections

2. The incorporation of essential material in the specification by reference to an unpublished U.S. application, foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference, if the material is relied upon to overcome any objection, rejection, or other requirement imposed by the Office. The amendment must be accompanied by a statement executed by the applicant, or a practitioner representing the applicant, stating that the material being inserted is the material previously incorporated by reference and that the amendment contains no new matter. 37 CFR 1.57(f).

3. The attempt to incorporate subject matter into this application by reference to Japanese Patent Laid-Open No. 195214/1998 is ineffective because even though applicants have amended the specification to include the phrase "incorporated by reference," the specification as originally filed does not express a clear intent to incorporate the reference.

4. As per 37 CFR 1.57, paragraph (b)(1), a mere reference to material does not convey an intent to incorporate the material by reference. The examiner notes that applicants' specification as filed merely references Japanese Patent Laid-Open No. 195214/1998 as describing suitable etching solutions (Spec. Page 12, lines 27-35); however this disclosure does not convey an intent to incorporate the suitable etching solutions by reference. Thus, applicants have not met all the applicable requirements set forth by 37 CFR 1.57, and the new matter rejection has been maintained.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

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a. The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 42, 44-48, 50-55 and 57-63 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. As discussed above, applicants have included the term "aliphatic" in an attempt to further define the etching solution. However, applicants do not have support for this limitation, and thus is considered new matter.

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 42, 44-48, 50-55, and 57-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nippon Steel Chemical in view of Suzuki (EP 0 832 918).

9. For the Nippon Steel Chemical reference, the examiner refers to the English language equivalent, Shimose et al. (US 6,203,918 B1). Both references have been provided to the applicant.

10. Nippon Steel teaches laminates for use in hard disk drive components having a stainless steel substrate, insulative polyimide layers thereon, and a final electrical conductor layer covering the polyimide layers (abstract). Insulative layers comprising two or three layers of polyimides are preferred (col. 3 lines 41-44), where each of the polyimide layers are etchable by hydrazine at rates of at least 0.5 μm (col. 3 lines 55-67).

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11. Nippon Steel fails to disclose or teach that the polyimide layers are etched with the claimed alkali-aliphatic amine solution. Thus attention is directed towards the Suzuki reference. Nippon Steel and Suzuki are considered analogous art, because they are from the same field of endeavor, formation of laminates comprising polyimide layers which are etched. Suzuki discloses that polyimide resins are typically etched via alkali-hydrazine-based etching solutions. However, hydrazine-based etching solutions have toxicity (carcinogenicity) and short usable lives, great care must be taken in handling them, thus the setting of ideal conditions for the etching has presented constant difficulties (pg. 2, lines 18-24). Suzuki discloses the usage of an etching solution, which comprises an aliphatic alcohol, an aliphatic amine, an alkali metal hydroxide, and water (abstract, pg. 4, lines 11-57). Suzuki discloses various advantages to using the disclosed etching solution, including providing economical etching rates for forming throughholes of a particular dimension and shape in polyimide films, satisfactory hole formation, and elimination of peeling (which typically occurs when hydrazine-based etching solutions are used to etch polyamide films with copper foils) (pg. 2, lines 24-28; pg. 3, lines 2-6; pg. 4, lines 36-39; Examples and Comparative Examples). Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the etching solution disclosed by Suzuki instead of the solution disclosed by Nippon Steel in the invention of Nippon Steel in order to obtain the above mentioned advantages.

12. The limitation regarding the etching ratio is recognized as a result effective variable, because changing it will clearly affect the type of product obtained, i.e. the type of pattern obtained on the resin. See MPEP § 2144.05 (B). Case law holds that “discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art.” See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

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13. In view of this, it would have been obvious to one of ordinary skill in the art to utilize various etching ratios of the first and second resin layers, including those ratios within the scope of the present claims so as to produce desired end results. The motivation to utilize a 1:1 ratio would be to obtain the exact same pattern on both of the resin layers, and the motivation to use a ratio wherein the first resin has a greater rate than the first would be to ensure that the first resin has a deeper pattern than the first resin.

14. In reference to the limitations of claims 44-48, 50-54, 57-63, Nippon Steel discloses the following: preferred conductive layers to be applied to the polyimide layers include copper or copper alloy foils (col. 5 lines 34-49). The examples show insulative layer structures, where three layers of polyimide are used. Example 1 shows an etching rate ratio of 1.09:1 (A:C), while example 6 shows an etching rate ratio of 1.19:1 (B:F). The examples show adhesion strengths above 300 g/cm for adhesion of the outer polyimide layers to either the stainless steel or copper layers. Furthermore, example 3 shows a thickness ratio of the core layer to outer layers of 4:1 (8 μm :2 μm). The reference teaches etching methods for forming electronic circuit or hard disk drive electronic components, where photoetching and wet etching are both used (col. 6 lines 49-67). Because no inorganic nitride or inorganic fluoride layers are noted, it is the examiner's position that the reference also teaches the absence of such layers.

15. It is noted that Nippon Steel discloses these limitations as suitable, therefore it would have been obvious to one of ordinary skill use the above mentioned limitations of Nippon Steel in the combined invention of Nippon Steel and Suzuki, as discussed above, with the expectation of obtaining a suitable laminate for a HDD (hard disk drive). Wherein the desired laminate produces minimal deflection during etching and is suitable for integrally-wired suspensions (col. 1, lines 55-63).

Response to Arguments

16. Applicants have argued the Specification Objection and the 35 U.S.C. §112, first paragraph rejection. Applicants have stated that via the amendment to the specification to include the phrase "incorporate by reference" the objection and rejection have been invalidated. Applicants have further argued that the specification as originally filed expressed a clear intent to incorporate the reference. In support of their position applicants have cited various case law. In response, the issue herein is that in the specification as originally filed applicants have merely referred to the Japanese Patent Laid-Open No. 195214/1998 as exemplifying suitable alkali-amine solutions suitable for use as the basic solution. Nothing in the specification as originally filed indicates a clear intent to incorporate the essential material by reference. Applicants have specified that a preferred basic solution is an alkali-amine solution, further, applicants refer to the Japanese Patent as disclosing suitable examples of an alkali-amine solution. Thus, it is clear that applicants are merely referring to the Japanese Patent as disclosing suitable examples. There is no intent for the Japanese Patent to be incorporated by reference. Thus, the Objection and Rejection are rendered valid.

17. In response to the case law cited in support of applicants position, the facts of *In re Lund* and *In re Seversky* are not sufficiently similar in the herein instance, thus the case law citations are rendered irrelevant and insufficient to overcome the herein Objection and Rejection.

18. Applicants have argued that the cited prior art reference fail to teach or suggest the result or functionality that is essential to the obviousness of optimizing the variable that achieves the recognized result. In response the examiner notes that the Suzuki reference clearly discloses the result or functionality that is essential to the obviousness of optimizing the variable that achieves the recognized result. Suzuki exemplifies that the dissolution rate of the strip, i.e. the etching rate, results in different types of resist patterns, holes with tapering, and holes with satisfactory edges

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(Examples). Additionally, Suzuki recognizes that an increase in the etching temperature typically results in an increase in the etching rate, wherein the etching temperature must be selected depending on the type of polyamide resin for etching (page 2, lines 29-33; page 4, lines 1-2). Thus it is clear that the etching rate depends on a variety of limitations including the etching temperature, type of polyamide and desired resist patterns. Wherein, as stated in the rejection, one of ordinary skill in the art would readily recognize optimization of the etching rate in order to obtain the desired product.

Conclusion

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Saira Haider whose telephone number is (571) 272-3553. The examiner can normally be reached on Monday-Friday from 9am-5pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Saira Haider
Examiner
Art Unit 1711



James J. Seidleck
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